WHAT IS CLAIMED IS:

1. A method of transmitting an orthogonal frequency division multiplex signal from a transmission side to a receiving side in every symbol of a prescribed length through a wire or wireless transmission path, said method comprising:

a first step of transforming a carrier modulation signal group deciding the phases and amplitudes of a plurality of carriers being orthogonal to each other on the frequency axis to said orthogonal frequency division multiplex signal on the time axis by performing inverse Fourier transformation in every symbol; and

a second step of adding front and rear guard intervals, including data being identical to those of rear and front end parts of each symbol of said orthogonal frequency division multiplex signal, to front and rear parts of said symbol respectively and transmitting the same to said receiving side.

2. The method of transmitting an orthogonal frequency division multiplex signal in accordance with claim 1, further comprising a third step of complex-multiplying said carrier modulation signal group by a reference complex signal group on the frequency axis,

said first step being adapted to transform a complex multiplication result being obtained in said third step to said orthogonal frequency division multiplex signal.

3. The method of transmitting an orthogonal frequency division multiplex signal in accordance with claim 2, wherein said third step is adapted to complex-multiply each said carrier modulation group by a result of complex multiplication, being carried out in advance of a constant symbol, serving as said

28

reference complex signal group with respect to each said symbol of said carrier modulation signal group.

4. The method of transmitting an orthogonal frequency division multiplex signal in accordance with claim 2, further comprising a fourth step of generating a complex signal group having a predetermined specific pattern with signals varying in phase at random,

said third step employs said complex signal group being obtained in said fourth step as said reference complex signal group with respect to each said symbol of said carrier modulation signal group, and

said first step ordinarily transforms said complex multiplication result being obtained in said third step to said orthogonal frequency division multiplex signal, while periodically transforming said reference complex signal group to said orthogonal frequency division multiplex signal.

5. The method of transmitting an orthogonal frequency division multiplex signal in accordance with claim 2, further comprising:

a fifth step of transforming said orthogonal frequency division multiplex signal being transmitted from said transmission side to a receiving carrier modulation signal group corresponding to said carrier modulation signal group in every symbol of said prescribed length, and

a sixth step of complex-dividing said receiving signal group being obtained in said fifth step by a prescribed reference complex signal group on the frequency axis.

6. A transmitter for an orthogonal frequency division multiplex signal, being an apparatus for transmitting said orthogonal frequency division multiplex signal to a receiving side in every symbol of a prescribed length through a wire or wireless transmission path, said transmitter comprising:

memory means storing a reference complex signal group;

complex multiplication means complex-multiplying a carrier modulation signal group deciding the phases and amplitudes of a plurality of carriers being orthogonal to each other on the frequency axis by said reference complex signal group being stored in said memory means on the frequency axis, for outputting a transmission carrier modulation signal group;

inverse Fourier transformation means performing an inverse Fourier operation on said transmission carrier modulation signal group being outputted from said complex multiplication means in every symbol thereby transforming said transmission carrier modulation signal group to said orthogonal frequency division multiplex signal on the time axis;

guard interval addition means adding front and rear guard intervals, including data being identical to those of rear and front end parts of each symbol of said orthogonal frequency division multiplex signal outputted from said inverse Fourier transformation means, to front and rear parts of said symbol respectively; and

transmission means transmitting said orthogonal frequency division multiplex signal having added said front and rear guard intervals to said receiving side in every symbol.

7. The transmitter for an orthogonal frequency division multiplex signal in accordance with claim 6, wherein said memory means stores a complex

30

multiplication result of said complex multiplication means in advance of a constant symbol as said reference complex signal group.

8. The transmitter for an orthogonal frequency division multiplex signal in accordance with claim 6, wherein said memory means stores a predetermined complex signal group as said reference complex signal group,

said complex multiplication means complex-multiplies said carrier modulation signal group by said reference complex signal group being stored in said memory means on the frequency axis for outputting the same, and

said inverse Fourier transformation means ordinarily transforms a complex multiplication result being outputted from said complex multiplication means to said orthogonal frequency division multiplex signal in every symbol, while periodically transforming said reference complex signal group being outputted from said memory means to said orthogonal frequency division multiplex signal.

9. The transmitter for an orthogonal frequency division multiplex signal in accordance with claim 8, wherein said memory means holds an output of pseudo-noise signal generation means generating a pseudo-noise signal as said reference complex signal group.

10. The transmitter for an orthogonal frequency division multiplex signal in accordance with claim 8, wherein said memory means holds an output of frequency sweep signal generation means generating a frequency sweep signal as said reference complex signal group.

11. A receiver for an orthogonal frequency division multiplex signal, being an apparatus for receiving said orthogonal frequency division multiplex signal being transmitted from a transmission side in every symbol of a prescribed length through a wire or wireless transmission path, said receiver comprising:

Fourier transformation means performing a Fourier transformation operation on said orthogonal frequency division multiplex signal on the time axis in every symbol, thereby transforming said orthogonal frequency division multiplex signal to a receiving carrier modulation signal group on the frequency axis;

memory means storing said receiving carrier modulation signal group being outputted from said Fourier transformation means every constant symbol as a receiving reference complex signal group; and

complex division means complex-dividing said receiving carrier modulation signal group being outputted from said Fourier transformation means by said receiving reference complex signal group being stored in said memory means on the frequency axis.

12. A method of transmitting an orthogonal frequency division multiplex signal from a transmission side to a receiving side in every symbol of a prescribed length through a wire or wireless transmission path, said method comprising:

a first step of forming a carrier modulation signal group for deciding the phases and amplitudes of a plurality of carriers being orthogonal to each other in every symbol on the frequency axis;

a second step of generating a complex signal group having a predetermined specific pattern with signals varying in phase at random;

a third step of complex-multiplying said carrier modulation signal group by said

32

complex signal group in every symbol on the frequency axis, thereby randomizing the phases of respective signals of said carrier modulation signal group; and

a fourth step of ordinarily transforming said carrier modulation signal group having said signals being randomized in phase in said third step to said orthogonal frequency division multiplex signal on the time axis by performing inverse Fourier transformation in every symbol while periodically transforming said complex signal group to said orthogonal frequency division multiplex signal by inverse Fourier transformation, for transmitting the same to said receiving side respectively.